

INDIAN INSTITUTE OF TECHNOLOGY, DELHI
HAUZ KHAS, NEW DELHI

NOTICE INVITING QUOTATION

Sealed quotations are invited for purchase of **“MULTIPURPOSE UNIT FOR SUPERCRITICAL FLUID EXTRACTION AND PARTICLE FORMATION USING RESS / SAS PROCESS”** for Center for Rural Development and Technology. Interested suppliers are required to submit their quotation as per the specifications given below. The sealed quotations are to be submitted in two separate envelopes.

A Technical Bid (Technical Specifications) The envelope containing Technical Bid should be properly sealed and marked clearly on the top right corner as “Technical Bid”

B. Price Bid (Price quote along with other financial details) The envelope containing the price bid should be properly sealed and marked clearly on the top as “Price Bid”

Technical Specifications of the equipment:

S. No	Component	Requirement
1.	High Pressure Extraction Vessels	Extraction vessels of 500 ml capacity, Separation vessel (300ml), RESS Reaction Vessel*(100ml), SAS Particle Formation Vessel*(500ml). Material of Construction should be SS 316. All the vessels should be designed and tested as per TUV/ASTM/ISO Safety Specifications to work safely up to 100°C and at an operating pressure of up to 400 Bar. The vessel should be finger tight and suitable for simple opening and closing with ‘O’ seal. RESS and SESS integrated software controlled heated with spray Nozzle of size: 0.004” (~ 100 micron) orifice
2.	High Pressure CO ₂ Pumps (Electrically operated)	SCF CO ₂ Extraction, (Flow Rate upto 50 g/minute accuracy ± 0.1g) SCF CO ₂ RESS (Flow Rate up to 50g/Min accuracy ± 0.1g) and Liquid/GAS solution pump (Flow Rate 10g/Min accuracy 0.1g) The pumps should work at Inlet operating pressure of upto 50 Bar and outlet operating pressure of upto 380 Bar with an accuracy of ±1Bar.
3.	Cooler/ Refrigerated bath	Reservoir capacity of 10 liters to liquefy CO ₂ Cooling Capacity 500 Watt, Temp -20 °C to 200 °C, pumping capacity 15 L/Hr.
4.	Cooling heat exchanger	used to liquefy CO ₂ before it enters the pump for maximum efficiency
5.	Mass Flow Meter	Fixed at the inlet of CO ₂ pump with Operating Pressure up to 100 bar, Flow rate from 5g to 200 g/min, Calibrated with CO ₂ pump
6.	Back Pressure	Material SS 316, Flow rate 200g/min, accuracy ±1g Pressure

	Regulator	up to 380 bar accuracy up to ± 1 Bar, for Fluid Temperature up to 100°C. The unit should be motor driven, temperature controlled assembly to compensate for cooling during depressurization with built in pressure sensor for control and pressure alarm monitoring,
7.	Electrical Heat Exchanger	Having high pressure tubing SS 316, temperature upto 100°C
8.	Magnetic stirrer for High Pressure Static Mixing Vessel	Magnetic stirrer should be able to work at Flow rate of up to 200 g/min (± 0.1 g) at operating Pressure 600bar (± 1 Bar), Temp. 100°C (± 1 °C)
9.	Particle Collector	250 ml size with operating pressure 0.3bar at ambient temperature for collecting particles with a window to see the spraying process. A pressure release device for safety up to 2 bar to prevent over pressurization.
10.	Temperature control modules	The temp controller with RS 232 is connected to the PC capable of monitoring and controlling up to 6 temperature zones.
11.	Control System and Software	Pre-loaded and Process suitable Soft ware package with PC, Monitor and Printer for controlling all necessary parameters
12.	Safety:	The system should be equipped with all the necessary safety devices.
13.	System mounting	Combined RESS/SAS system should be compact and mounted on a movable cart
14.	Additional CO ₂ pump	An additional CO ₂ high pressure pump of flow rate upto 50g/min and above mentioned specifications to be supplied with the system
15.	UPS	A UPS of the matching capacity with 1 hr back up to be provided with the equipment

General Terms & Conditions:

Envelope A (Technical Bid): The following details to be enclosed in this envelope

- *Technical brochures mentioning all details of the equipment with complete address of the principals to be provided with technical quote.
- *Any optional accessories/soft ware to be quoted separately
- *Any additional requirement for installation, calibration or working of the equipment to be mentioned exclusively
- *List of the organizations along with address where this equipment has been supplied during last 5 years.
- *Address of technical office for technical support after sales in Delhi with telephone no. and fax no.

Envelope “B” (Price Bid)

- *If the quote is for imported equipment, the cost should be based on FOB, New Delhi after allowing the discount (if any). Sole agency-ship certificate on the letterhead of the principal company has to be provided.
- *The Quotation must have validity of at least 3 months
- *Institute makes payment after delivery and successful installation. If the equipment is to be imported, the address of the company should be stated for opening LC.
- * The Proprietary item certificate from the principals (if required).
- *Comprehensive on site warranty for three years is required
- *Genuine comparative statement should be attached with the quotation

Both these envelopes containing the technical bid and price bid should be enclosed in an outer envelope and should also be sealed and addressed to after clearly mentioning on top right corner of the envelope the quotations for “MULTIPURPOSE UNIT FOR SUPERCRITICAL FLUID EXTRACTION AND PARTICLE FORMATION USING RESS / SAS PROCESS”

***Institute reserves the rights to accept or reject any/all the quotations without assigning any reason.**

The quotation must be submitted by 5PM on **27th August, 2012** at the address given below.

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